

# The farmer, the worker and the MP

## The digital divide and territorial paradoxes in Switzerland

Luc Vodoz · Mark Reinhard ·  
Barbara Pfister Giaque

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**Abstract** The territorial dimension of the digital divide is usually considered as a phenomenon that penalizes the peripheral regions, especially in terms of regional economic development. Taking into account the territorial networking of ICT (Information & Communication Technologies) infrastructures—particularly high-speed networks—provides what is probably the principal reason for such a perception. This is particularly true considering that the most-peripheral regions and those with the smallest population densities are also the poorest in terms of ICT infrastructures. In Western countries, however, the digital divide is no longer the result of network-related problems. Nowadays, the issue of the skills required to adequately exploit the potential of ICT is at the forefront. Yet this evolution is likely to lead to an inversion of the inequalities between the

centre and the periphery, as populations without such skills—recent immigrants, the unemployed, the illiterate, people with little education or on low incomes and other socially marginalized people—are generally concentrated in urban centres. Consequently, the priority for reducing inequalities of access to ICT resources is no longer the provision of high-performance ICT infrastructures for peripheral regions, but rather the implementation of continuing education and social action policies within the urban centres.

**Keywords** Social integration/exclusion · Territorial inequalities · Infrastructures · Skills · Switzerland

### Introduction: virtual livestock and urban realities

The sun rises over an isolated clearing, in the depths of an alpine valley. Mr. Farmer has finished milking his cows and has cleaned out the cowshed. He goes back to his farmhouse and switches on two appliances in the kitchen: the electric coffee machine and the computer. Sipping his coffee, he checks the price of silage (the summer was too dry, he will have to buy some), and checks how many eggs he will have to deliver tomorrow (the regional mountain farmers' association handles the daily quantities of chickens leased out on the internet). After calculating the amount of federal subsidies to which his herd of goats entitles him on the ad hoc website of the competent national organization, he decides to put off updating his computerized cost

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This article takes up and refines the argument developed in Vodoz and Reinhard 2006.

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L. Vodoz (✉) · M. Reinhard · B. Pfister Giaque  
Communauté d'études pour l'aménagement du territoire  
(C.E.A.T.), Ecole polytechnique fédérale de Lausanne  
(EPFL), Suisse, EPFL ENAC INTER CEAT, BP – Station  
16, CH-1015 Lausanne, Switzerland  
e-mail: luc.vodoz@epfl.ch  
URL: <http://ceat.epfl.ch>

M. Reinhard  
e-mail: [mark.reinhard@epfl.ch](mailto:mark.reinhard@epfl.ch)

B. Pfister Giaque  
e-mail: [barbara.pfister@epfl.ch](mailto:barbara.pfister@epfl.ch)

accounting system, but does perform his citizens' duty by clicking on the mouse to express his view of the new agricultural policy that is being put to the vote by the confederation. His coffee has gone cold. Mr. Farmer, light-hearted, switches off his computer and sets off to chop wood in the neighboring forest.

During this time, the heavy morning traffic has fortunately roused Ms Worker from her sleep: her new digital alarm clock—which she probably forgot to set properly the night before—did not go off. While Ms Worker gets ready, the radio informs her of massive traffic jams around the area where she works: it is possible to consult the public transport timetables on the internet, but her son is not there to help her. Too bad: she will have to walk. Moreover, her monthly city transport pass has expired: last night there were too many people in the queue for her to renew it; and the self-service machines are much too complicated for her to operate. But it is not this that preoccupies Ms Worker this morning: throughout her journey to the factory, she wonders how she is going to confess to her foreman that, since her workstation has been automated, she is no longer managing to perform the tasks demanded of her. With a heavy heart, she asks herself how long she will be able to keep her job.

A few hours later, at the federal palace, the Swiss parliament prepares to debate a bill intended to support the socioeconomic development of so-called 'peripheral' regions. For the member of parliament, the stakes are clear: eager to preserve the subtle balance of Swiss federalism, the parliamentary majority will approve the measures intended to promote the construction of high-speed information and communication technologies (ICT) infrastructures in the few villages which are still without them. But all of a sudden, he is gripped by doubt: are the inhabitants of the peripheral regions really the ones who are suffering from the digital divide? On the contrary, what if promoting national territorial fairness involved taking measures to benefit the urban centres?

The MP's doubts may seem iconoclastic. However, we shall attempt to get to the bottom of them.

### The context: appropriation of ICT and social integration

In a society in which the economy, as well as social relations, are broadly conditioned by the use of ICT

(the 'information or knowledge society'), the necessary means to access ICT and to be able to use them have become critical factors, in terms of socioeconomic integration in particular. This contribution sets out to explore the territorial dimension of the inequalities between those who possess the means for such integration via the 'world of ICT' on the one hand and those who do not.

This article is based on research conducted with a grant from the Swiss National Foundation for Scientific Research (FNS), within the framework of national research programme 51 (NRP 51) devoted to social integration and exclusion.<sup>1</sup> It broadly constitutes an extension of other work relating to the territorial dimension of ICT.<sup>2</sup>

Our current work involves analyzing the digital divide and its implications in terms of social integration and/or exclusion. More precisely, we are seeking to identify the existence of causal links between 'digital'<sup>3</sup> inclusion or exclusion on the one hand and social<sup>4</sup> integration or exclusion on the other, as shown in Fig. 1.

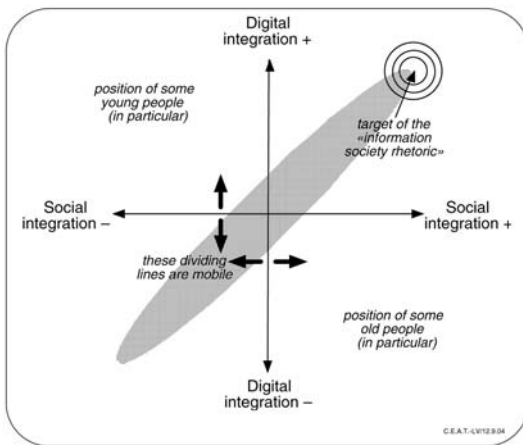
Whilst some consider that the digital divide is only a reflection of other socioeconomic inequalities, or a 'simple' factor aggravating these inequalities (Pippa 2001), we on the contrary put forward the hypothesis that the correlation between 'digital' and social integration/exclusion is imperfect, that these two dividing lines do not strictly intersect, and that a specifically digital divide does therefore exist—as 'proof' one may cite the existence of individuals or

<sup>1</sup> Vodoz/Rey/Rossel et al., *La fracture numérique: émergence, évolution, enjeux et perspectives* (2003–2005). In addition to theoretical work, this research included empirical phases, with some 80 qualitative interviews (of the semi-directive type) performed.

<sup>2</sup> See in particular Vodoz (ed.) 2001; Vodoz and Pfister Giauque 2003; or Vodoz et al. 2005.

<sup>3</sup> By 'digital' integration, we mean the appropriation of ICT and their resources by individuals or social groups, or in other words the ability to access digital technologies, to make concrete use of these technologies and to exploit their resources, but also the sense of integration which, subjectively, individuals develop in relation to the 'world of ICT'.

<sup>4</sup> We have represented the concept of social integration in the form of four dimensions of the social bond: the professional (employment), interpersonal (relations with the family, friends, etc.), political (the civil bond and participation in public life), and territorial (feeling of spatial belonging, associated in particular with a place of residence).



**Fig. 1** ‘Digital’ integration/exclusion and social integration/exclusion (the grey area represents the theoretical positioning of individuals and social groups, if one assumes a strong correlation between degrees of social integration and ‘digital’ integration)

social groups who are not positioned within the oblique grey area representing the ‘perfect’ correlation between these two types of integration or exclusion, in Fig. 1.

In the context of the research that inspired this article, the digital divide is not perceived in terms of north-south relations: we are concerned with examining the divide that prevails at the national level in Switzerland. However, although this research primarily concerns Switzerland, close analogies are probably possible with most of the national territories of the European countries (or at the European level), and even with North America.

We note finally that in this context we approach the digital divide more from the social viewpoint—and therefore from the point of view of individuals and social groups—rather than from that of business or the economy in general.

### Access to the ‘information society’: discriminating factors

The territorial approach to the digital divide is indeed just one of the ‘gateways’ to a better understanding of the structural or sociodemographic factors that characterize this divide: other complementary approaches, such as a gender-based approach, or one using different socioeconomic variables, are necessary to

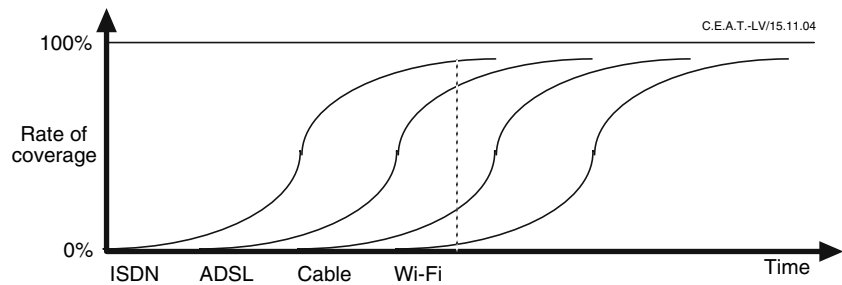
obtain a better grasp of the outline of the digital divide and to draw up strategies for closing it.

Within the framework of our research, although some of those interviewed consider that their location (home and/or work) is of practically no importance in relation to ICT, others consider it a real factor, but not necessarily with reference to specific elements that might have affected them directly. Thus one realizes that the idea of ‘peripheral’<sup>5</sup> territories being disadvantaged in different ways is frequently applied to ICT matters, but without such an assertion being backed up in all cases: sometimes it is a matter of prejudices rather than findings which can be objectively verified—to the point that certain commentators, including some players who are supposed to be well informed about national realities, declare that in cantons categorized as ‘peripheral’ (or rural, or mountainous), the absence of access to high-speed ICT networks is a major handicap for the economy, even though these territories are in fact served by high-performance infrastructures. The territorial dimension of the digital divide therefore merits even greater analytical effort in order to put to the test the numerous *a priori* conclusions that exist about it.

In this article, we refer to the diversity of factors on which the ability of individual and social groups to access ICT, use them and exploit their potential depends, both in terms of content and processes (information handling, management, etc.). Apart from the financial resources that must be available (to acquire the hardware and software, and for operating costs in particular), two other essential

<sup>5</sup> The notion of ‘periphery’ is the subject of major, recurrent debates. Within the framework of this article, we adopt the definition of Schuler et al. (2004) of the rural space as a synonym for ‘periphery’: ‘(...) the rural space is defined pragmatically as the sum of the regions which do not form part of an agglomeration, in the knowledge that these so-called rural regions present very different characteristics’, agglomerations being defined as ‘(...) urbanised sites which are distinguished by a spatial concentration of the population and the economy. Unlike the [peripheral] regions, the centre and the neighbouring municipalities form an uninterrupted built totality’ (ASPAN 1997). We further underline that we are at the level of the national territory here, not at the urban or metropolitan level: in our definition, the suburbs of agglomerations (areas of peri-urbanization) therefore form part of the so-called ‘central’ territories.

**Fig. 2** The temporal relationship of the spread of new ICT infrastructures, resulting in territorial gaps in terms of access to the latest technologies



factors condition the ability to access the potential of the ‘world of ICT’:

- The proximity of physical access to infrastructure networks (including high-speed cable networks)
- The existence of skills of various kinds (technical, generic, cultural and social)

#### Access to high-performance computer networks

From a territorial viewpoint, the infrastructure factor stands out as a major discriminating factor, in that so-called ‘peripheral’ territories are provided with adequate infrastructures less quickly and less generously, if only for reasons of profitability, technological innovations in this sector are rolled out firstly in the most highly urbanized areas before then being extended to the peripheral regions; the hierarchy of technical networks and their development cycle depend to a large extent on geographical, economic and demographic data, combined with the business strategies of the telecommunications operators; the distance of towns or villages from the main digital distribution channels effectively results in significantly lower data-transfer rates.

As a result, even if the peripheral regions manage to make up progressively for their individual deficiencies in terms of access to the new IT infrastructures, they hardly ever ‘catch up’ with the urbanized territories in their technological progress (see Fig. 2). Thus asymmetric digital subscriber line (ADSL), for example, which initially made its appearance in the urbanized territories is now available throughout almost all of Switzerland; whereas in parallel the cable networks, and then Wi-Fi (wireless fidelity), are appearing first of all exclusively in the towns and cities.

From this, certain authors (e.g., Rallet 1993; Côté 1999) deduce that the inhabitants of peripheral

regions are ‘once again’ disadvantaged by this infrastructure deficit. ICT are then considered as a factor that accentuates territorial inequalities. However, others (e.g., Crivelli 2001) highlight the potential of ICT to ‘compress space’ and ‘pulverise time’, thereby giving the peripheral regions the means to develop their competitive advantages and to ‘play in the metropolitan playground’. ICT are then perceived as instruments for freeing the peripheries from slavery or a means of re-establishing a territorial equilibrium.

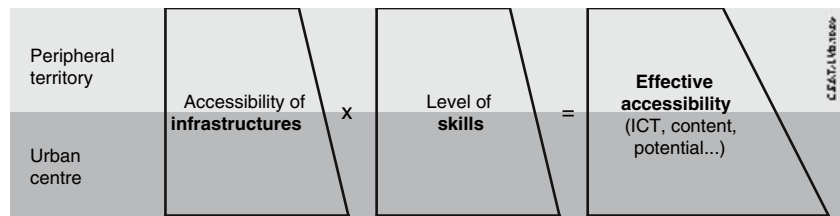
However, ensuring access to ICT infrastructures for all is certainly not sufficient to permit the efficient use of these technologies or to reduce territorial disparities. Today’s consumer demands internet access via a high-speed connection, as evidenced by the ever-greater ‘payload’ of computer data transmitted. Today in Switzerland, the universal service<sup>6</sup> does not impose any legal obligation concerning the provision of this type of network. The principal telecommunications operator, *Swisscom*, is only obliged to offer a telephone and integrated services digital network (ISDN) connection. High-speed connections, such as ADSL, are therefore not included.<sup>7</sup>

Nevertheless, if the penetration rate of high-speed coverage is currently (June 2004 data) 98% of the population (Seydaghia 2004), this also means that all the urban regions are served by such a service, and that the gaps in this sector once again therefore concern the regions that are most peripheral *from the*

<sup>6</sup> The universal service aims to ensure a minimum level of public services throughout the national territory, regardless of whether a location is peripheral or not.

<sup>7</sup> Usually, a service may be considered as a minimum standard once more than 60% of households use it. The Federal Office of Communications will redefine the universal service provisions in the course of the forthcoming negotiations with *Swisscom* in 2007; ADSL may then form part of the universal service in Switzerland.

**Fig. 3** Territorial distribution of ICT infrastructures and skills (trend): the case of businesses hungry for high-speed access, classic regional approach<sup>9</sup>



*ICT viewpoint*<sup>8</sup>. To this must be added the fact that there are physical limits to high-speed connections: this type of network has to be linked to an exchange with a service range of 5 to 7 km; once this distance is exceeded, the connection speed is greatly reduced. Therefore, even if a household does have an ADSL connection, it may not be able to fully exploit it. So today, as shown in Fig. 3, it is necessary to point out that, even if all regions now have internet access, the towns and cities still enjoy an advantage over the peripheries in terms of high-performance infrastructures such as high-speed access.

The debate about ICT-related centre-periphery territorial disparities is justified, in particular in terms of regional economics; and we have no intention of favoring any of the sometimes antagonistic positions which confront each other in this regard. But beyond the relevance of this debate, our purpose is to relativize its scope: though the infrastructures approach may be opportune, it remains largely inadequate, in any case with regard to the social dimension of this issue. At the Swiss level, one can even say that it is outmoded; and the more the (very) high-speed networks develop—until they cover the majority of the peripheral regions—the less important the infrastructure approach becomes.

It must be stated here that we adopt the postulate according to which the requirements of households in

terms of data transfer rates are not of the same magnitude as those of businesses, particularly in the tertiary sector. In fact, apart from some leisure applications (games, music and video files, etc.), most of the socially decisive internet functionalities and resources<sup>10</sup> are accessible to households even in the absence of a very high-speed connection; whereas the requirements of businesses in the tertiary sector for the exchange of huge volumes of data imply that they have access to particularly high-performance infrastructures.<sup>11</sup>

From the territorial viewpoint and one comparing the centre and the periphery, it results from this postulate that—as illustrated by Fig. 4—the effective situations and the related stakes vary significantly depending on whether one is speaking of households or businesses, as the access threshold to high-performance ICT (critical level of data transfer rates) is not of the same magnitude.

### The skills problem

Although ICT and the territorial segregation that they are likely to cause are most often reduced to the presence of more or less high-performance infrastructures, it is, however, clear that infrastructures

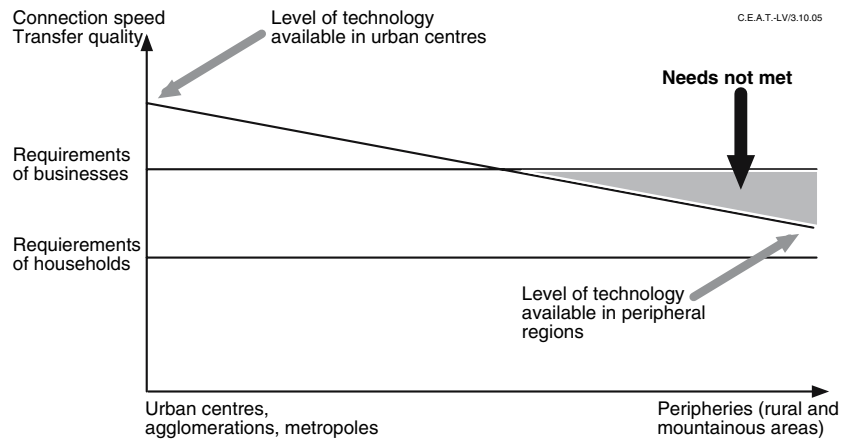
<sup>8</sup> It should be noted here that the peripheral character of a region *in terms of ICT* does not—or does not necessarily—correspond to the peripheral character of a region *from a territorial point of view*. More generally, the peripheral character of a region in ICT terms is clearly linked to the territorial networking of ICT infrastructures; however, the hierarchical organization of ICT networks is not always superimposed on that of other infrastructure networks, nor on the spatial hierarchy of residential or urban environments.

<sup>9</sup> The width of each of the trapezoids represents the degree of accessibility of the infrastructures (or the level of skills respectively): according to this Fig. 3, the more peripheral the territory, the lower the accessibility (or the level of skills respectively)

<sup>10</sup> Socially decisive in the sense that they are indispensable to cover the primary basic needs in terms of access to information and online communication. It should be noted that taking into account computer entertainment would update or even reverse this postulate.

<sup>11</sup> The ‘tertiarization’ of industry, moreover, merely reinforces this phenomenon (Crevoisier and Maillat 1995). In another context, a study conducted in Switzerland on the liberalization of public services (Thierstein et al. 2004) highlighted the particular importance of telecommunications as a factor in the competitiveness of businesses located in the peripheral regions of the Alps. For these, what is important in this area is not so much the cost but rather the quality and performance of this type of service. Quite clearly, there is evidence of increased demand for high-speed infrastructures in businesses located at the periphery.

**Fig. 4** Requirements of businesses *versus* requirements of households



alone are of no use unless they are used effectively. Although coverage of the national territory by high-performance IT networks meets the main requirements of almost all households, on the skills front the situation is more complex.

In this respect, and according to a study conducted in Switzerland on behalf of the Swiss Agency for Development and Cooperation (Gerster and Haag 2003), it is found that not only the age or income of individuals, but also their education and culture play a primary role: during the period considered and over the whole of the Swiss population, whereas 48% of men used the internet regularly, only 28% of women did so. Moreover, 35% of people with a low level of education used the net, compared to 70% of those with a good education. We also know that today 75% of people over 50 do not use the internet, and that—more surprisingly—72% of those leaving compulsory education do not use the internet regularly either (OFCOM 2004).

As part of the aforementioned research project, we carried out several series of interviews with adults in ICT training, and with their trainers, in order to reveal the objective and subjective situations of integration or exclusion in relation to ICT, the mechanisms and strategies of integration into the ‘world of ICT’, and the links postulated between ‘digital’ integration and exclusion and social integration and exclusion.

Our empirical investigations—carried out essentially in 2004 and early 2005—revealed the diversity of ICT education for adults, in terms of the type of skills that this education provides or should provide. In fact, a distinction has to be made between three types of competences (even if these partially intersect):

- technical skills (knowing how to use a computer, knowing how to use new software or a new operating system, etc.). These technical skills are essentially one-off, specific, and therefore have a limited period of validity. Acquiring them makes it possible to ‘close’ the digital divide, but essentially in its static dimension.<sup>12</sup>
- generic skills (methodological knowledge, knowing how to learn, etc.). Even if they are closely linked to the ‘world of ICT’, these generic skills have a longer period of validity than technical skills, as they are to a fairly large extent transferable from one situation to another. Acquiring them makes it possible to ‘close’ the divide in both its dynamic and static dimensions;
- cultural skills (or socio-technical skills: familiarity with technologies, etc.) and social skills (self-confidence, ability to communicate, etc.), the acquisition of which is linked not only to particular forms of ICT training, but which result from a combination of factors (including ICT training, but also professional and socio-familial stimuli, etc.). Like generic skills, cultural and social skills have a long period of validity and are transferable from one context to another.

We then find that people who are victims of the digital divide as a result of inadequate skills are not all faced with the same problems; and that the means of closing this divide must be adapted to individuals (and social groups), as a function of the different specific profiles of ‘digital’ exclusion.

<sup>12</sup> Regarding the distinction between the static and dynamic dimensions of the digital divide, see the next section.



## Static divide and dynamic divide

The technical development of ICT, the diversification of their uses and the multiplication of the practices they permit are a continuous process, in constant evolution, which requires individuals to make a constant effort to adapt and learn. In this light, the digital divide manifests itself in two distinct temporal forms:

- the static divide, which is most often referred to, is the divide that is perceptible at a given time (the gap between those who are or who feel<sup>13</sup> integrated and others);
- the dynamic divide, which is a constantly moving dividing line for each individual—see Fig. 1—whatever his or her level of ICT skills, is linked to the constant evolution of ICT. Given this dynamic dimension of the digital divide, those who are integrated today may be excluded tomorrow, and vice versa, depending on each person's ability to adapt.

If the static dimension of the digital divide alone prevailed, it would be sufficient to wait for the younger generations to replace their forbears for the divide to disappear of its own accord, as long as no major new technological challenges appear. Of course, this is not the case.

In reality, people with a high level of education combine the various types of useful skills fairly easily: in terms of the dynamic divide, these people are able to overcome without any major difficulty any deficits—notably of a technical nature—which they will sooner or later face. On the other hand, people with only a low educational level possess only few appropriate skills or none at all, and this translates statistically into significant disparities.<sup>14</sup>

<sup>13</sup> With regard to social integration, the subjective dimension of integration or exclusion is as important as its objectification through indicators or 'expert' analyses.

<sup>14</sup> In Switzerland, Internet use varies widely according to the level of education: 77.4% among those who have had a university education, 67.5% among those with higher vocational education, 44.0% among those with secondary education and 25.4% among those with compulsory education (OFS 2003). The data for France are similar, with Internet access rates varying between 10.1% for people with no qualifications and 57.6% for higher-education graduates; or, according to professional categories, access rates varying from 23.0% among industrial workers to 67.5% among managers (INSEE 2004).

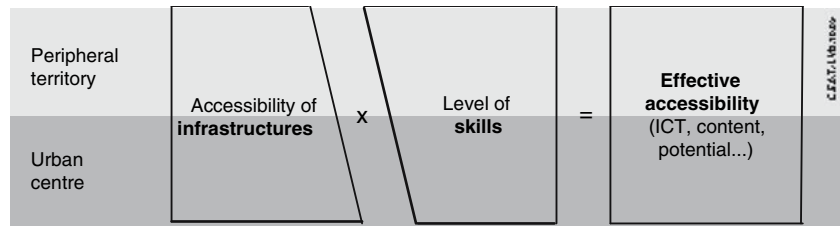
## The territorial paradoxes

Taking the dynamic dimension of the digital divide into account, some of the elements outlined also apply to households (and more broadly to individuals and social groups, as opposed to businesses); the key factor in regard to accessing ICT and their resources depends in the first place on skills levels and therefore, at one remove, on the factors that influence the emergence and development of appropriate skills.

However, the spatial distribution of skills, correlated with the traditional socio-demographic indicators, is not homogeneous (see Fig. 5): it is in the urban (or metropolitan) centers where—alongside the economic and cultural 'elites'—those segments of the population who are the worst off in terms of social integration are concentrated (Cunha et al. 1998).

Some data make it possible to highlight this over-representation of socially and economically disadvantaged populations in urban centers, whether they are large or small (according to Swiss standards). Thus it is a fact that, although the highest average incomes are found in the urban areas of the Swiss plateau, it is also there that income inequalities are greatest; the rural and peripheral areas have a more homogeneous income structure (Ecoplan 2004). The 'social problems index', developed by the Swiss Federal Statistical Office, reveals the extent of the difficulties that municipalities must face and refers to the problems of unemployment, job losses, drug abuse, demographic ageing and social assistance (OFS 1993a). This index highlights the concentration of this type of problem in the cities, from Geneva to Zurich, via Lausanne, Montreux, Neuchâtel, Bienne, Basel, Saint-Gall and Lucerne (no data are available for Bern and La Chaux-de-Fonds). The unemployment statistics (OFS 2000) show a similar trend, with the exception of the Ticino canton, which is more seriously affected than the Swiss average, and which is affected over its entire territory. The figures concerning recipients of social assistance (OFS 1993b) reinforce this picture in which the central towns and agglomerations are both the places where wealth is created and where inequalities are the most marked.

**Fig. 5** Territorial distribution of ICT infrastructures and skills: accessibility for households, graphical representation of the current situation<sup>15</sup>



Thus the large urban centers<sup>16</sup> are home to marginalized individuals and social groups—in relation to socio-professional categories and the employment market in particular—including recent immigrants who hardly speak the language of their region of residence, and people with a fragile status such as asylum seekers, temporary or clandestine workers and/or residents, the homeless, drug addicts and other ‘problem’ populations, who are frequently recipients of social assistance. These individuals and social groups—plus those who for various reasons have had only a limited education—naturally have difficulty in obtaining jobs of socioeconomic value. Finally, many old people—including retired people—are in a similar situation in terms of access to the ‘world of ICT’.

Apart from the social categories just mentioned, it is also necessary to include the (other) people who are victims of functional illiteracy—those who find it very difficult to read an article in a daily newspaper and understand its content, to write a short, basic postcard-type text, or perform simple maths. The functional illiterate represent almost 20% of the total population of a country like Switzerland (Girod 1992), this rate of 20% remaining valid even if one limits the count to young people (OFFT 2004).

To these different categories must be added, with some overlap, those living below the poverty line.

<sup>15</sup> See note 9. The rectangle in Fig. 5 then represents equivalent accessibility in urban and peripheral territories.

<sup>16</sup> Note again that we consider the peri-urbanization areas as part of the ‘central’ territories. The Swiss Federal Office for Spatial Development, moreover, specifies that ‘the socially disadvantaged population groups (...) tend to gravitate to the town centers, where they find greater anonymity, contacts and various social services. The town centers thus tend to concentrate social problems. In the large agglomerations, the trend towards impoverishment is not limited to the town center but also affects some municipalities of the close periphery’ (ODT-ARE 2005).

Income, moreover, is considered as a key factor in understanding the distribution of access to ICT (C.E.A.T. and LEM 2004). According to the Swiss Federal Statistical Office, in 1997, 16.3% of the highest income earners were connected to the Internet, as against 2.3% on low incomes, i.e., a gap of 14 points. In 2001, this gap increased to 45.7 points, with 59.6% of high income earners having Internet access compared with 13.9% on low incomes: in absolute numbers, the digital divide is getting even wider.

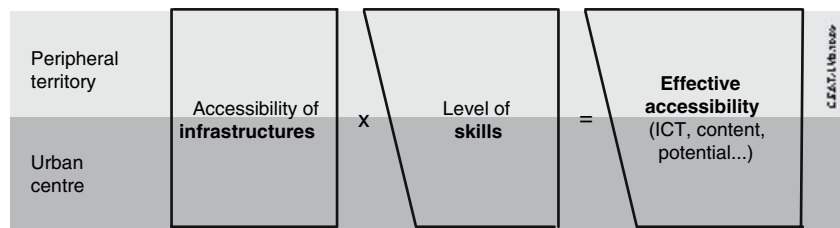
It should also be noted that the issue of access to appropriate ICT training (more particularly with regard to ‘low-threshold’ training) concerns a specific portion of the skills level distribution curve: just as in most compulsory education classes the pace of learning is appropriate for three-quarters of the population, with problems at the two ends of the curve (gifted pupils on the one hand and those with learning difficulties on the other); the availability of generic and socio-cultural skills as well as the associated ability to access ICT training are problematic only for that section of the population located at the ‘wrong end’ of the curve, a ‘wrong end’ which is proportionally more important in the urban regions than in the peripheries (OFS 1993a).

In ICT, as in the educational sector, it is necessary to invest proportionally more resources (per individual) in order to obtain results and encourage ‘catching up’. It is a question of a *latent* demand for ICT training, emanating generally from individuals or social groups with limited financial resources. Hence, in the absence of voluntarist intervention by collective players such as the state—or various associations—the ‘free play of the market’ for ICT training leads to the exclusion of the least skilled, who therefore risk remaining by the digital wayside.

If urban centers accumulate functionalities, this also has consequences on the behavior of people without skills in the area of ICT. In Switzerland, it is a fact that many personalized services have been cut



**Fig. 6** Territorial distribution of infrastructures and ICT skills: potential accessibility for households, trend<sup>17</sup>



back and replaced by automatic systems or virtual one-stop shops. This is true for railway stations, post office counters or banks. Also, in the villages that have paid for this restructuring, there is virtually no option than to acquaint oneself with the technologies imposed on them. In the centers, on the other hand, although there are a multitude of services that have been computerized, it will nonetheless always be possible to use a counter providing a personal service. As a corollary, it is not as necessary to possess a modicum of ICT skills in the centers, as it is in the periphery.

Finally, from the dynamic viewpoint, the evolution of indicators such as the level of education or the illiteracy rate is worrying, to say the least; not only generally (e.g., at the national level) but also in terms of territorial equilibrium. The trend towards strengthening the comparative advantage of the peripheral regions—where the proportion of individuals with a very low socio-educational capital is lower than in an urban area—is therefore increasing (see Fig. 6), particularly if one considers that, even in the peripheral regions, infrastructure is no longer a restrictive factor in terms of speed.

## Conclusions

Only a short time ago, the classic approaches rightly demonstrated that peripheral regions were disadvantaged with regard to access to ICT. Aware of this fact, the Swiss government decided in 1998 to implement a policy intended to guarantee access to ICT for the entire population. At present, it is true that the universal service is guaranteed throughout the national territory. However, that does not mean that all the problems have been solved; far from it.

In terms of access to the resources of the ‘information society’, it is apparent that the criterion of skills become preponderant for individuals and social groups, whilst the criterion of availability of high-performance infrastructures has become secondary. Now from the territorial viewpoint, these two factors—infrastructures and skills—do not act in the same direction: from the point of view of the existence of nontechnical skills (generic, cultural and social skills), the large urban centers have less provision in relative terms, with concentration in the centers of groups who are socially, economically and even culturally disadvantaged.

The classic approach of the territorial dimension of the digital divide clearly remains adequate at the global level of north-south relations. It probably also remains pertinent at the level of the countries ‘of the South’ (or the ‘less developed countries’), where the basic skills necessary to use ICT are probably still concentrated in the urban centers. However, in Europe in general, and in Switzerland in particular, it appears that consideration of the center-periphery criterion to analyze the territorialization of the digital divide is resulting increasingly in a comparative advantage in favor of the peripheries. This phenomenon is further reinforced by the growing number of commuters among better-educated people, who are deserting their urban residences to live in rural regions.

In terms of strategies (particularly public strategies) for combating the digital divide, this conclusion obviously has serious consequences: not only must the state cease to focus its action solely on the universal service in terms of infrastructure and on converting it into requirements (with regard to the companies with licences) concerning high-speed networks, but if it really wishes to close the digital divide—in particular at the level of its dynamic dimension—it must act essentially in the areas of education (basic and continuing) and social action. It

<sup>17</sup> See notes 9 and 16.

must do this not so much in order to strengthen the technical skills of individuals, but rather to strengthen their basic skills (literacy, etc.), and even their generic and social skills (methodological skills, but also self-confidence and other social skills), as well as their cultural (or socio-technical) integration.

From now on, these are the essential skills that condition access to the resources of the 'information society'. This is why, when he consults the parliamentary debates on the internet tonight, Mr. Farmer will easily understand the MP's explanations for his U-turn; truly, even among colleagues of his living in very isolated hamlets, Mr. Farmer does not know a single one who is facing any ICT accessibility problem. Thus, the MP was right to contest the priority the parliament was going to accord to ICT infrastructure investments in peripheral regions. As for Ms Worker, she will not know anything about all these parliamentary debates ... at least not as long as she does not have access to the measures aiming to promote ICT competencies, for which the MP just voted.

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